

# User Guide, Loop Diagnostic Tool AS2000

Interactive Fire Detection Systems



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# Table of Contents

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<b>1. Introduction.....</b>	<b>3</b>
1.1 About the handbook .....	3
1.2 The reader.....	3
1.3 Reference documentation .....	3
<b>2. General description .....</b>	<b>4</b>
<b>3. Set up the system .....</b>	<b>5</b>
3.1 Minimum PC requirements.....	5
3.2 Install the software .....	5
3.3 Install the hardware (AutroSafe operating panel) .....	6
3.3.1 Overview .....	6
3.3.2 Cable connections to an AutroSafe operating panel .....	6
3.4 Install the hardware (WAS-2000 interface unit).....	7
3.4.1 Overview .....	7
3.4.2 Cable connections within WAS-2000 interface unit .....	8
3.4.3 Cable connections to WAS-2000 interface unit .....	10
<b>4. Start the tool .....</b>	<b>11</b>
4.1 Enter access levels .....	11
4.2 Configure the tool .....	12
<b>5. View the loop topology.....</b>	<b>13</b>
5.1 Select the loop driver.....	14
5.2 Scan the loop .....	15
5.2.1 Configure scan options .....	16
5.2.2 Stop the scan .....	17

<b>6. Work with the loop.....</b>	<b>18</b>
6.1 View information.....	18
6.1.1 View notifications .....	18
6.2 Inspect and act on loop units .....	19
6.2.1 View information about a loop unit.....	19
6.2.2 Perform actions on a loop unit .....	19
6.2.3 Run AutoGuard commands .....	21
6.3 Generate a report .....	24
6.3.1 Generate configuration for AutoSafe .....	25
6.4 Measure loop resistance .....	25
6.5 Power off the loop .....	26
6.6 Run tests .....	26
6.6.1 Test LEDs .....	26
6.6.2 Run a SelfVerify test .....	28
6.6.3 Test for breaks .....	29
<b>7. Upgrade AutoGuard firmware .....</b>	<b>30</b>
<b>8. Monitor SMV information .....</b>	<b>31</b>
8.1 Watch SMV curves.....	31
8.2 View SMV bar graphs.....	31
<b>9. List of symbols .....</b>	<b>33</b>
<b>10. Examples of special topologies.....</b>	<b>35</b>
10.1 Ex. 1: Break in loop wiring.....	35
10.2 Ex. 2: Multiple branch-off (star connection).....	36
10.3 Ex. 3: Inadequate interpretation of loop topology .....	37
<b>11. Terms and abbreviations .....</b>	<b>39</b>

# 1. Introduction

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## 1.1 About the handbook

This handbook is intended to provide all necessary information for the operation of the Loop Diagnostic Tool AS2000, used for interactive fire detection systems (AutoSafe and Autoprime).

## 1.2 The reader

The handbook is intended to be used by Autronica Fire and Security service and technical personnel who are responsible for the installation and verification of detection loops.

## 1.3 Reference documentation

Reference documentation comprises the technical marketing documentation for interactive fire detection systems (AutoSafe and Autoprime).

## 2. General description

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AS2000 is a PC-based installation/service and marketing tool, running under Microsoft Windows. AS2000 includes the following main features:

- Graphical topology view of all loop units in one loop. Presents loop with branch-off (one level), loop break position, loop short-circuit position, and individual graphical symbols for all loop units.
- Measuring facilities for finding a loop's total resistance, current consumption, and voltage drop.
- Possibility to find breaks in loop wire, both in positive and negative wire.
- LED test and SV test.
- Graphical view of SMV curves of four selectable detectors and SMV bar graphs for all detectors on a loop.
- Upgrade functionality for AutoGuard firmware.

AS2000 can be run when connected directly to an AutoSafe operating panel, or standalone connected to the loop (AutoSafe or AutoPrime) by means of an external interface unit, WAS-2000.

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## 3. Set up the system

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### 3.1 Minimum PC requirements

- Intel 486 DX 100 MHz or higher, when not using the SMVCurves feature
- Intel Pentium 133 MHz or higher, using all available features
- Windows 7 or newer
- 32 Mb of RAM is recommended
- Monitor with resolution of 1024 x 768 HiColor (16 bit) is recommended
- Mouse or another pointing device

### 3.2 Install the software

The AS2000 software is delivered in different variants:

- **AS2000\_<version>.exe** is a stand-alone executable file of the AS2000 tool. This variant is available for download from Autronica's product web.
- **AS2000\_<version>\_Installer\_<FW-version>.exe** is an installer package that contains the AS2000 tool plus the firmware to upgrade specific AutoGuard units. This variant is available from Autronica's support team.

To run the stand-alone executable file:

1. Store the executable file in any folder/directory you want.
2. Optionally, create a shortcut to the file by dragging the file from the Windows Explorer to your desktop.

To install from the installer package:

1. Store the installer package in any folder/directory you want.
2. Double-click the file and follow the instructions to accept the license agreement and set up the tool.  
Choose where to install the tool and whether to create a desktop icon.  
You can also select to directly launch the tool after installation.
3. After installation, you can delete the installer package.

### 3.3 Install the hardware (AutroSafe operating panel)

AS2000 can be run when connected to an AutroSafe operating panel (Fire Alarm Control Panel), or standalone connected to the loop (AutroSafe or Autroprime) with an external interface unit.

This section describes the hardware setup when connected to an AutroSafe operating panel.

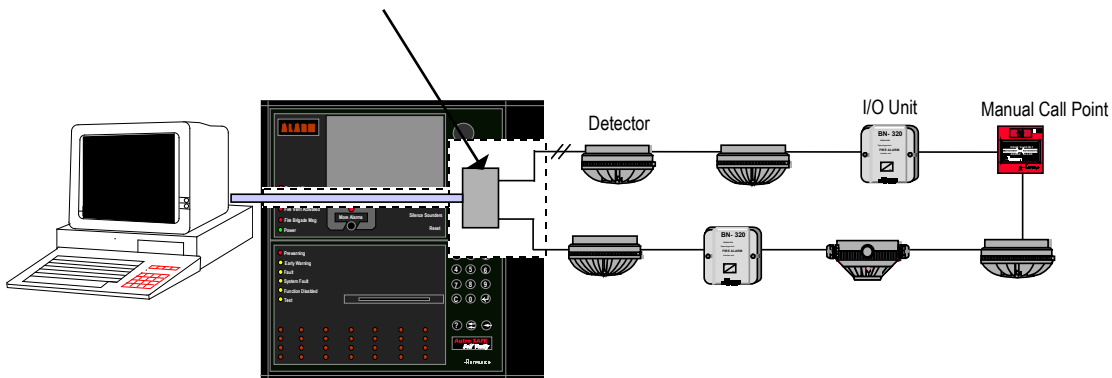
For instructions on connecting with an external interface unit, see 3.4 *Install the hardware (WAS-2000 interface unit)*.

#### 3.3.1 Overview

To connect AS2000 to an AutroSafe operating panel, one of the serial ports on the computer must be connected to the *Communication Module* in the operating panel.

You can then communicate with any loop that is connected to a Loop Driver Module BSD-310 / BSD-311 in the panel.

Loop Driver Module in Fire Alarm Control Panel

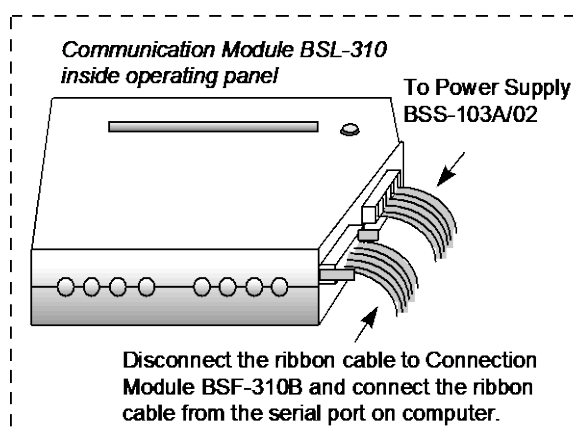


#### 3.3.2 Cable connections to an AutroSafe operating panel

To connect your computer to the Communication Module BSL-310 inside an operating panel:

1. Disconnect the ribbon cable that is already connected to the Communication Module BSL-310.



**Note:**

To avoid activating the internal buzzer when disconnecting the ribbon cable from the Communication Module BSL-310, turn the power OFF before disconnecting the ribbon cable. When you have connected the external ribbon cable from the computer, turn the power ON.

2. Connect the 9-pin Desub connector of a connection cable (116-XJA-207) to a serial port on your computer, and the other end of the cable to the Communication Module inside the operating panel.

No further connections are needed, since all power connections to the Power Module BSS-310 are already done inside the panel, and the Loop Driver Modules BSD-310 / BSD-311 are already connected to the loops.

## 3.4 Install the hardware (WAS-2000 interface unit)

AS2000 can be run when connected to an AutoSafe operating panel (Fire Alarm Control Panel), or standalone connected to the loop (AutoSafe or Autoprime) with an external interface unit.

This section describes the hardware setup when connecting with an external interface unit.

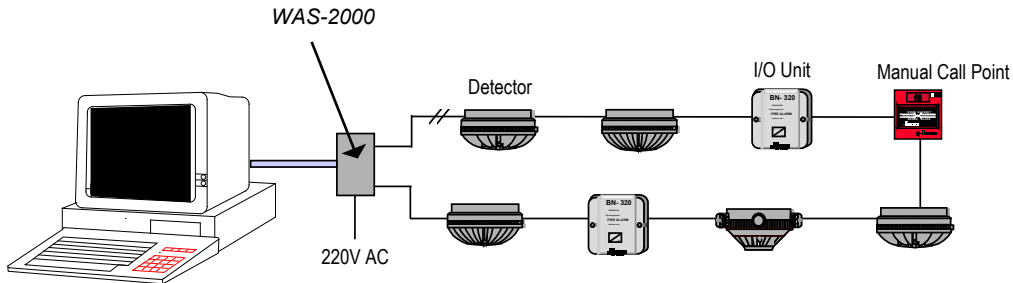
For instructions on connecting to an AutoSafe operating panel, see 3.3 *Install the hardware (AutoSafe operating panel)*.

### 3.4.1 Overview

The external interface unit WAS-2000 is a complete hardware toolbox for testing AutoSafe or Autoprime loops without using an AutoSafe operating panel.

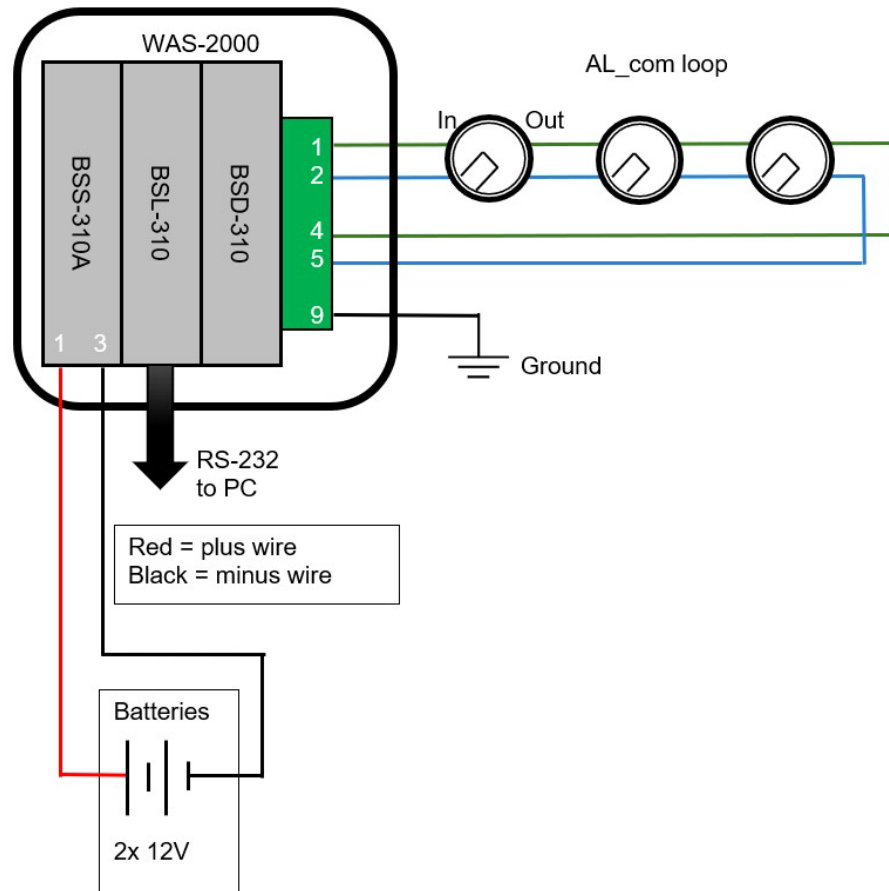
It consists of a Power Module BSS-310, a Communication Module BSL-310, and a Loop Driver Module BSD-310. These modules are always included in an operating panel.

You can connect the Loop Driver Module BSD-310 to the loop you want to communicate with.



### 3.4.2 Cable connections within WAS-2000 interface unit

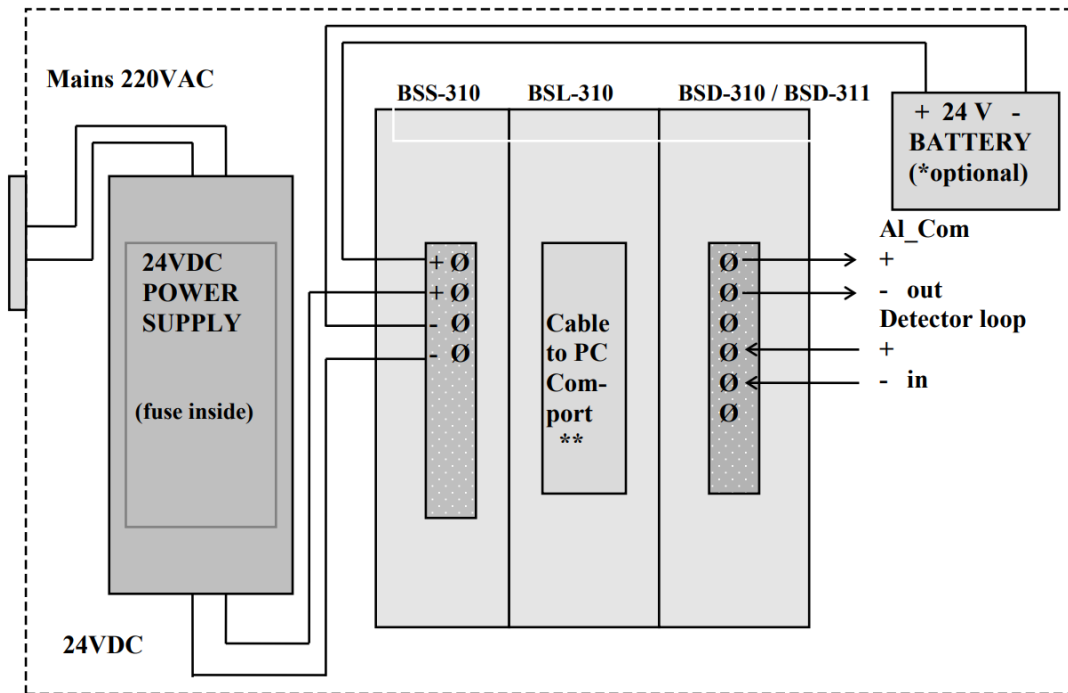
The following drawing illustrates the cable connections in a WAS-2000 model that includes a battery, but no power supply:



**Note:**

When using this model, the batteries must be fully charged before starting a loop scan.

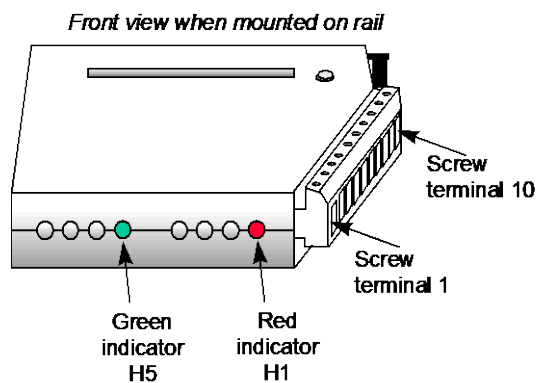
The following drawing illustrates the cable connections in a WAS-2000 model that includes a power supply:



**Note:**

If a battery is installed in this model, disconnect it when not in use, to avoid discharge.

The following drawing illustrates any of the installed modules.



### 3.4.3 Cable connections to WAS-2000 interface unit

To connect the WAS-2000 interface unit to your computer and the loop you want to test:

1. Connect the 9-pin Desub connector of the cable that is connected to the Communication Module BSL-310 to a serial port on your computer.
2. Connect the Loop Module BSD-310 to the loop that you want to communicate with:

Screw Terminal no. on Loop Driver Module BSD-310	Signal
1	OUT +
2	OUT -
3	CHASSIS
4	IN +
5	IN -
6	CHASSIS

3. Connect the WAS-2000 interface unit to 220 V AC power.

## 4. Start the tool

To start AS2000, double-click the desktop icon or the executable file (see 3.2 *Install the software*).

The tool will then prompt you for the COM port to which you connected the operating panel or interface unit.

**NOTE:**

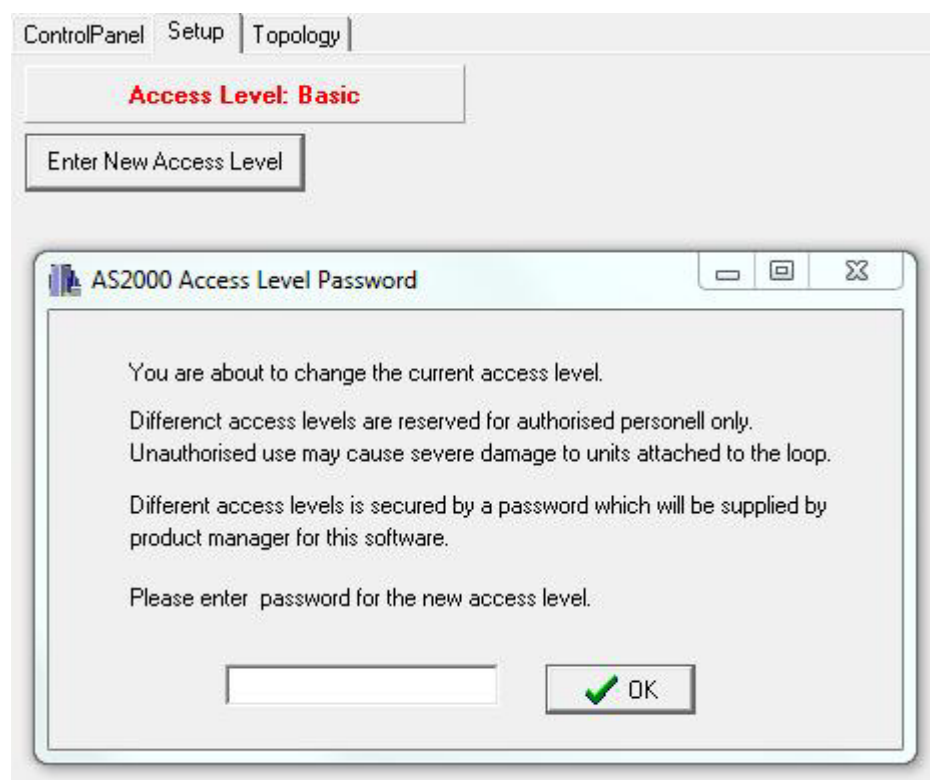
If you select an invalid COM port, the tool will show an error message. You can then select a different port by clicking the **Open COM-port** button on the **Topology** tab.

The tool will automatically start logging and inform you of the location of the log files.

### 4.1 Enter access levels

By default, AS2000 will start at access level “Basic”. The access level determines the privileges of the user, and which operations are available.

To switch to a different access level, click the **Enter New Access Level** button on the **Setup** tab. You are then prompted for a password. The correct password will give you access to more advanced functionality.



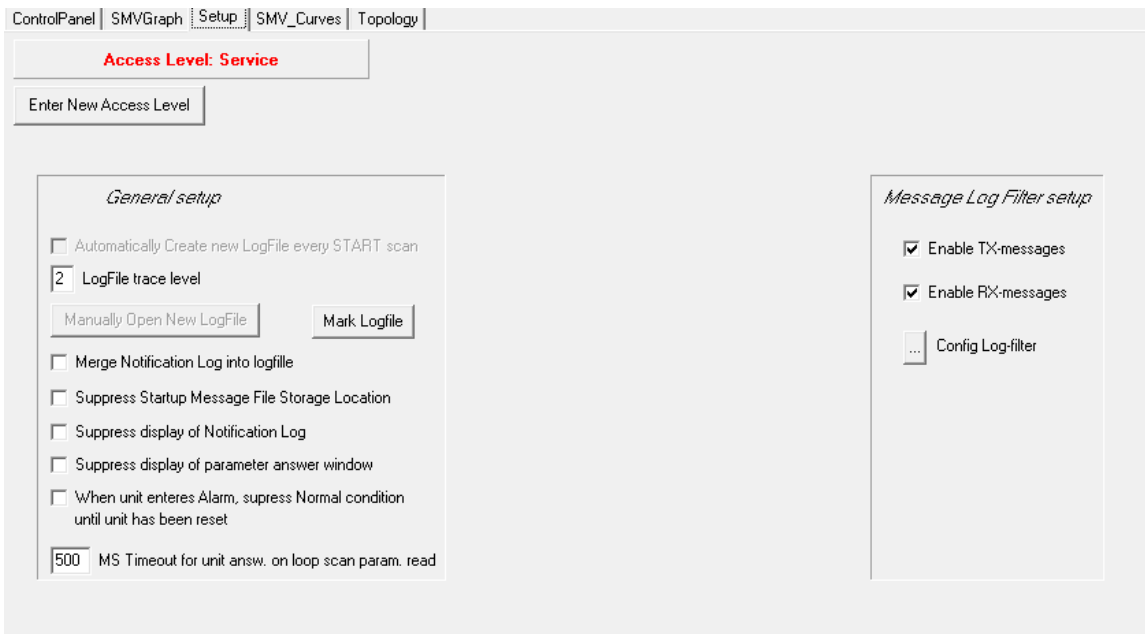
After the first start, the access level (and other user-specific information) is stored in a configuration file in the following folder:

%APPDATA%\AS2000\

## 4.2 Configure the tool

Depending on the access level (see 4.1 *Enter access levels*), the **Setup** tab offers various configuration options. For example, in access level “Service” you can configure logging, which information should be displayed, and what timeout should apply when reading parameters from a loop unit.

Note that the available options might differ for different versions of the tool.



## 5. View the loop topology

The **Topology** tab is the first view most users will access to see a graphical representation of the detection loop.

Note that before AS2000 has scanned the loop and presented it on the **Topology** tab, most of the AS2000 commands are not available.

ControlPanel | Setup | **Topology**

LSI=0  
Loop driver (OUT)

LSI=1 V-430-S-VADw  
SN=000.037.2022.045.00267

LSI=2 V-430-S  
SN=000.037.2022.045.00203

LSI=3 BF-300  
PN= 0.006.2022.033.30022

LSI=4 BN-305/A  
PN= 0.215.2022.045.28079

LSI=5 BG-201  
PN= 0.030.2022.031.00085

LSI=6 V-430-S-VADR  
SN=000.037.2022.045.00221

LSI=7  
Loop driver (IN)

START

Scan Options

Read Param

Notifications

Report

Loop Measure

Power OFF

Test break (+)

Test LED's

SV test

Reset

<--- Select LD

Points: 06

LD: 1 (BSD-310)

## 5.1 Select the loop driver



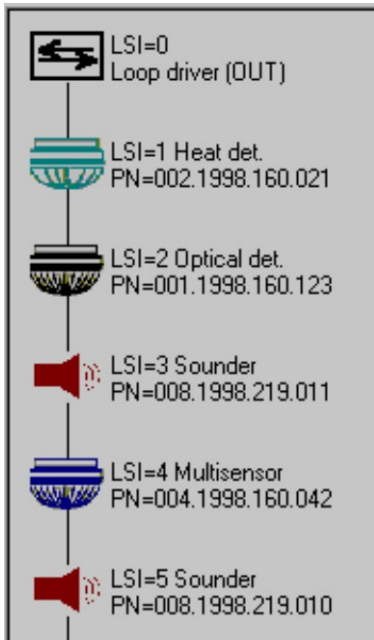
If there are several loop drivers or other modules connected to AS2000, you must select the one to communicate with. This is mostly relevant if you have several Loop Driver Modules (BSD-310 / BSD-311), but you can also select other modules (for example, Communication Module BSL-310 or Output Module BSJ-310) to communicate with.

By default, loop driver 1 (LD1) is selected, which is the Loop Driver Module in the WAS-2000 interface unit.

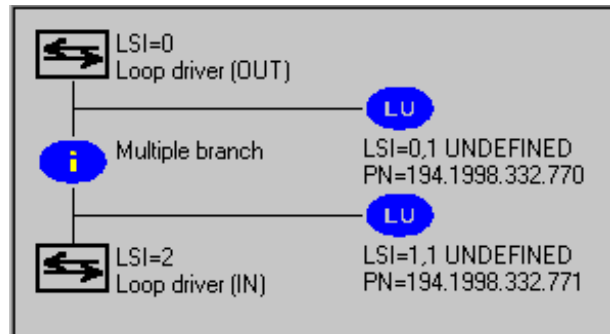
To update the list of available loop drivers, click the **Search Loop Drivers** button.

After scanning the loop (see 5.2 *Scan the loop*), a graphical presentation of the selected module will appear. The examples below show two different presentations.

*Example:* Loop Driver Module BSD-310 has been selected



*Example:* Communication Module BSL-310 has been selected



*As shown in the example, AS2000 is not able to present the topology for the modules BSL/BSB/BSJ-310.*



## 5.2 Scan the loop



To see a graphical representation of the loop topology in a correct electrical sequence, you must scan the loop.

The scanning of loop units is split into two logical phases, which are visible underneath the **Busy!** message in the upper right corner of the window while the loop is being scanned:

- The first phase is “Scanning topology”, in which AS2000 finds all units physically connected to the detection loop.
- The second phase is “Reading parameters” from the loop units. The status bar at the bottom of the window shows what kind of data is being retrieved.

To scan the loop:

1. Check and configure the scan options (see *5.2.1 Configure scan options*).

**Note:** Make sure to check the scan options if the detection loop is connected to an AutoKeeper BN-180.

2. Click the **START** button.  
The current loop scan options are displayed for a few seconds.

When AS2000 starts searching for loop units, the **START** button changes to a **STOP** button. A steady red circle (“traffic light”) is shown in the lower right corner.

3. Observe that when all loop units have been detected, the red circle switches to yellow, meaning that AS2000 now reads parameters from the loop units.  
The **STOP** button is disabled in this stage. It switches back to **START** when the parameters are read.

Each time AS2000 finds something irregular, it will beep, and in some cases terminate the topology scan with an error message.

You can repeat this step by clicking the **Read Param** button.

4. When the topology scan is finished, AS2000 tests for break in the positive wire. If there is a break, the position can be located automatically. This will take less than 20 seconds.
5. If you are running an AS2000 installer package that includes a firmware upgrade, you will be prompted to upgrade the firmware of the AutoGuard units on the loop after the loop has been scanned. See *7 Upgrade AutoGuard firmware*.

After the loop has been scanned, the **Topology** tab displays a graphical presentation. Points are presented with unique symbols for each type, and with important information such as the production number (PN) and the loop sequence index (LSI). In case of illegal topologies, like multiple branch-off and loop break, these will be presented with self-explaining symbols. For a complete list of available symbols, see *9 List of symbols*.

## 5.2.1 Configure scan options

Click **Scan Options** to configure how the loop is scanned.

**Loop scan options**

No AutoKeeper (BN-180) units on the loop

AutoKeepers on loop - scan from Primary side

AutoKeepers on loop - scan from Secondary side

Loop Quick Scan

Quick Scan waiting (millisec) for point startup

Read Loop unit parameters

The content of the Loop scan options depends on the version of AS2000 and the current access level.

Before starting the loop scan, you must specify whether any **AutoKeeper BN-180 units** (required for Dual Safety systems) are present on the loop. If there are, choose whether the detection loop belongs to the primary or the secondary system (defined in the specific configuration):

- If the detection loop in question belongs to the primary system, select “AutoKeepers on loop – scan from Primary side”.
- If the detection loop in question belongs to the secondary system, select “AutoKeepers on loop – scan from Secondary side”.

**Loop quick scan** can be set to increase the AS2000 speed on detecting units.

The value can be set as low as 900 ms. However, if the value is set too low, a false loop break might be presented due to some units starting up too slowly. The default value (when **Loop quick scan** is not selected) is 2000 ms.

If BN-180 units are present, the **Loop quick scan** value should not be set lower than 1200 ms.

After the topology scan has completed and been presented to the operator, AS2000 will start reading loop unit parameters. Depending on the number of loop units, this can take a while.

You can unselect **Read loop unit parameters** if you don't need the loop parameters. Note that in this case, AS2000 will have insufficient data to generate a complete report, since loop unit parameters have not been retrieved.

### 5.2.2 Stop the scan



While the loop is being scanned, you can click the **STOP** button to force AS2000 to stop the topology scan. When this button is pressed, the topology presented on screen might be incorrect. To clear all points and start powering up from the beginning, click **START** again.

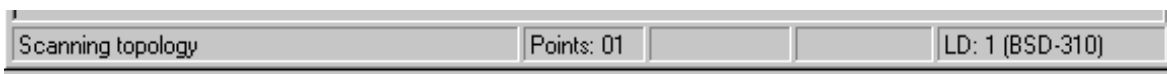
The **STOP** button is available while AS2000 is searching for loop units. When all units have been detected, the **STOP** button is temporarily disabled until the mandatory part of reading loop unit parameters has been completed. When all broadcast reading of unit parameters and the following individual read of point configurations has completed, the **STOP** button switches back to the **START** button.

# 6. Work with the loop

After the loop has been scanned and its topology is visible, you can interact with it. For example, you can inspect the loop and the loop units, interact with the loop units, generate reports, and run tests.

## 6.1 View information

The status bar at the bottom of the screen gives the following information:



### AS2000 status

Gives the status of AS2000 and states whether input is expected from the user.

### Points:

The total number of points.

Earth failure on + and - wire (if present).

States the chosen Loop Driver module (BSD-310) or other module (for example, the Communication Module BSL-310 or Output Module BSJ-310).

### 6.1.1 View notifications

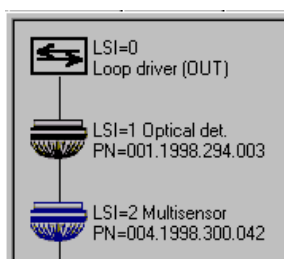


All important messages and notifications from the AS2000 tool and the loop units appear in the AS2000 notification log.

The log contains time stamps. You can copy and paste the displayed information as plain text if you want to keep it.

The notification log is displayed in a popup window that opens automatically when you start AS2000. If you close the window, it will not re-open automatically when it receives new events. To open it again, click the **Notifications** button on the **Topology** tab.

## 6.2 Inspect and act on loop units



In the topology view, you can inspect information about loop units and perform actions on them.

To do so, point your mouse at the icon of the loop unit (not the text describing the unit).

### 6.2.1 View information about a loop unit

When pointing on a loop unit on the **Topology** tab, a hand symbol appears, and *static* information related to this unit is shown in a field in the bar on the right.

Left-clicking the mouse while pointing on a loop unit displays *dynamic* information related to this unit (thus information applicable at the moment, for example, the current temperature). To retrieve this information, AS2000 communicates with the selected point.

The displayed information depends on the point type and your access level.

#### Static information

Loop unit type

Production number

SW: Software

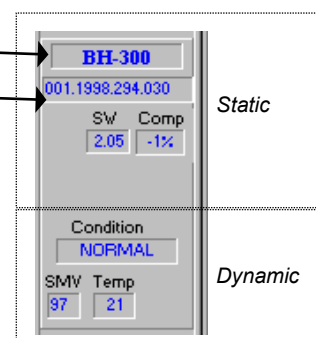
Comp: Grade of compensation for pollution (optical detectors, multisensors)

#### Dynamic information

Condition: normal (quiescent), alarm, fault, test, disablement, fault warning (prealarm)

SMV: Standard measure value

Temp: Temperature



- LED >
- Start SV test >
- Add to SMVCurves >
- Adjust contamination filter >
- Output On/Off >
- FAD/VAD On/Off >
- Class Setting >
- Panel Command >
- Notified Body - Test Commands >
- AutroGuard commands >
- Set Serial Number
- Reset

### 6.2.2 Perform actions on a loop unit

Right-click on a loop unit to display a popup-menu (like the one on the left) with actions you can execute at the specific point that is selected. Available commands vary depending on the point type and the access level.

Some of the available commands are described in the following sections.

## LED

*Access level: Basic*

Turn on or off the LED-indicator on a point. Only one LED on the loop will be on at the same time, so when you choose to turn a LED on, AS2000 automatically turns off all other LEDs.

## Start SV test

*Access level: Basic*

Run a SelfVerify test on this specific point. See 6.6.2 *Run a SelfVerify test* for more information.

## Add to SMVCurves

*Access level: Service*

Select a point for the **SMVCurves** tab. On the **SMVCurves** tab, up to four curves can be presented at the same time, so you must select which one of these four to associate with the selected point.

## Adjust contamination filter

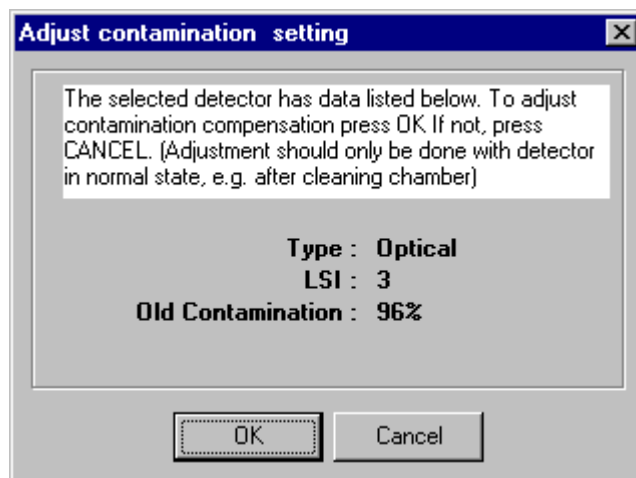
*Access level: Service*

*Available for: optical detector, multisensor detector*

Adjust the contamination compensation for a detector. Perform this action after cleaning the optical chamber to avoid the detector signal being too high or low, depending on the type of dust that has been removed. The detector will also adjust itself without performing this action, but it might take some weeks.

It is important that the chamber is properly dried out before performing this action, and that the detector does not have any abnormal environmental condition.

When performing the action, AS2000 communicates with the detector to get the actual contamination setting/values and displays the result:



Click OK to start the adjustment of the contamination filter. When the adjustment is completed, a new window shows the result:



The new compensation value set in the detector is shown in red text. Do not expect this value to be absolute zero.

### Output On/Off

*Access level: Basic*

*Available for: multifunction IO units BN-303, BN-304, BN-305, BN-308*

Switch the output (or outputs) on or off.

### FAD/VAD On/Off

*Access level: Basic*

Test a FAD or VAD by turning it on or off.

### Reset

*Access level: Basic*

Reset the point.

## 6.2.3 Run AutoGuard commands

- Open Command Dialogue
- Read/Clear Logs
- Read HW and FW Information
- Calibrate CAP sensor
- Set current date-time
- Set unit selected for FW upgrade
- Firmware upgrade

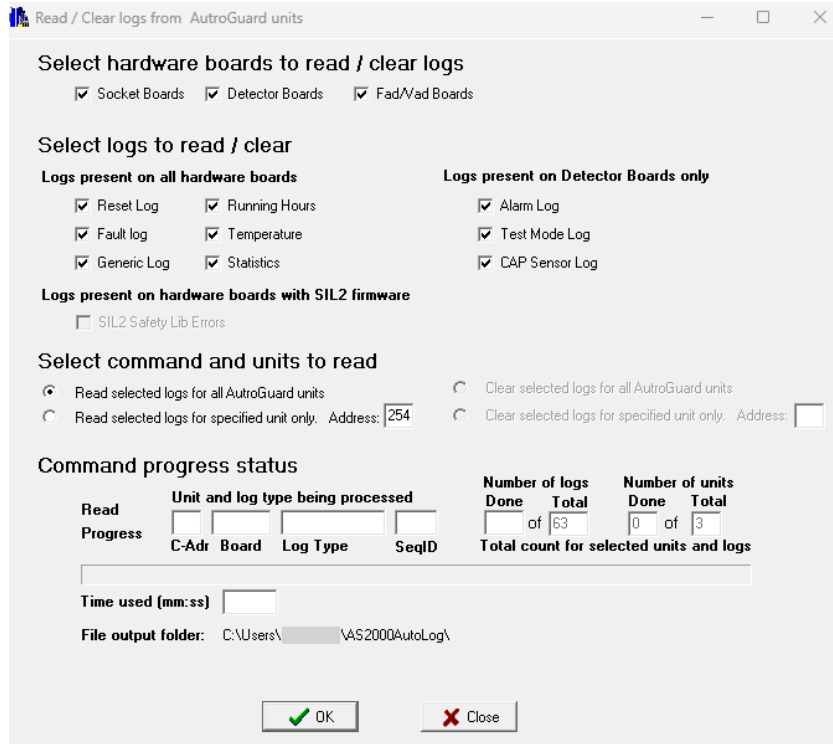
AutoGuard units have a separate set of commands that you can run. These commands are available under the **AutoGuard commands** entry in the right-click menu. Available commands vary depending on the access level.

Some of the available commands are described in the following sections.

## Read/Clear Logs

Access level: Service

Open a window that allows reading or clearing the internal AutoGuard logs.



The command can be applied to all AutoGuard units or to a single AutoGuard unit (specified by its C-address). Note that it isn't possible to clear logs that are currently in use.

The log data read from AutoGuard units is stored on your PC. The folder location is visible in the command window.

### IMPORTANT:

Be careful when clearing log data. It cannot be recovered.

## Read HW and FW Information

Access level: Basic

Generate a file that shows the hardware and firmware version for all AutoGuard units on the loop.

The file is stored in the following folder:

%HOMEPATH%\AS2000AutoLog\

## Set current date-time

Access level: Service

Set the date and time for a loop unit.



This is done automatically when the loop is scanned. However, if a unit is disconnected from power, its date and time are lost, and you can use this command to manually set it again.

### **Set unit selected for FW upgrade**

*Access level: Service*

Select a single unit or address for upgrading.

### **Firmware upgrade**

*Access level: Basic*

Open the **AutoGuard FW Upgrade** window that allows updating the AutoGuard units with new firmware. See *7 Upgrade AutoGuard firmware* for more information.

This operation shall only be done by authorized personnel with proper training.

## 6.3 Generate a report

To view and save a report with useful information about the selected loop, click the **Report** button.

The screenshot shows the AS2000 Report Generator window with the following content:

```

Site ID:
Panel/Loop ID:
Date : 03/03/25
Time : 11:10:33
AS2000 Ver_7.11.0
Serviced by:

Loop driver selected : LD: 1 (BSD-310)

Loop output voltage = 24.4 V
Loop input voltage = 24.5 V
Loop Resistance - = 0.0 Ohm
Loop Resistance + = 0.0 Ohm

"Loop resistance" measurement includes resistance in cable + connectors, and for the minus wire also
the resistance of the isolation switches for each loop unit.
When the installation manual refers to "Max cable resistance", this is the sum of the resistance
in plus and minus cables (the wires only), so a total of e.g. 50 ohm is max 25 + 25.
Assuming that cable resistance is equal for plus and minus, the increased value for the minus wire
is the extra resistance of the isolation switches for each loop unit.

NOTE: Any bad/loose/polluted or corroded wire connection may increase the loop resistance.

NOTE: Comp: Negative value is pollution caused by "white dust". Positive value is "black dust"

ERROR: Found AutoGuard units for AutoSafe and for AutoPrime on the loop.

Prod.Number      LSI    Point Type      SW-version  Class      SMV    Comp.  Comments
000.058.2022.040.00044 0.1    BD-300/SPARE   1.10.06    A1         92     Retro SW version: 3.2
000.052.2023.071.00001          V-100         1.23.31
000.039.2020.076.00018 1      V-430-S-VADW  1.23.32    MS:N1,H:ALS  96     2%   Retro SW version: 3.2
000.037.2022.350.00165          V-100/AP      1.23.31
000.040.2023.018.01369 2      V-530         1.23.32    D:M,H:A1,S:M  96     -3%  Multisensor with Heat (Optical + He
000.038.2023.016.00439          V-110         1.23.32
000.039.2020.070.00234 3      V-430-S      1.23.32    MS:C,H:ALS  96     4%   Retro SW version: 3.2
000.037.2019.147.00042          V-100/AP      1.23.31
000.039.2020.076.00102 3.1    V-430-S-VADR  1.23.32    MS:N1,H:ALS  96     2%   Retro SW version: 3.2
000.037.2019.350.00133          V-100/AP      1.23.31
000.058.2022.040.00048 3.2    V-430         1.23.32    MS:N1,H:ALS  96     0%   Retro SW version: 3.2
000.037.2019.147.00086          V-100/AP      1.23.31
000.098.2024.143.00006 3.3    BG-301        1.01.02    DayCl-1,Medium  1
000.101.2024.143.00003          BG-301        1.01.02

Overview of AutoGuard HW units : Socket + Detector
Number of HW-units shown in list: 14

Total number of loop units      : 7
Number of AutoGuard units      : 1
Number of Retro spare units     : 1
Number of AutoPrime units      : 4
Number of BG-301 units         : 1
    
```

At the bottom of the window, there are configuration options and buttons:

- Sort list by:  LSI  Type  CAdr  Show name
- Include AutoGuard Hardware Unit In Report:  Socket  Detector  Sounder/Vad
- Buttons: Make Config, Save, Print, Close

Note that the report feature is not available until the loop unit parameters have been retrieved.

In the configuration options at the bottom of the report window, you can sort the loop units by loop sequence index (LSI), point type, or C-address. The "Show name" option sorts by LSI, but will show a descriptive name for the unit instead of the unit type name.

If AutoGuard units are present, you can choose which parts of the AutoGuard unit should be included in the report.

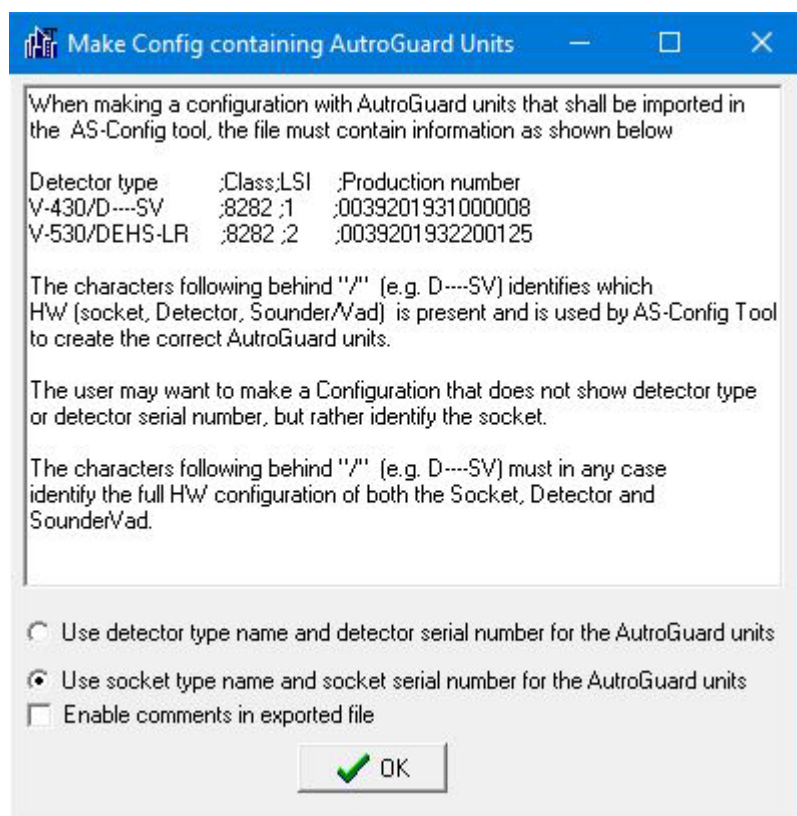
### 6.3.1 Generate configuration for AutoSafe

Make Config

You can generate an Excel CSV file from the loop report, which the AutoSafe Configuration Tool can convert to AutoConfig format.

To do so, click the **Make Config** button in the report window.

If any AutoGuard unit is found on the loop, you must choose whether to use the detector or the socket information in the exported CSV file. The default option (if the generated file is to be imported in the AutoSafe configuration tool) is to use the detector type name and serial number, but you can choose to use the socket type name and serial number instead.



## 6.4 Measure loop resistance

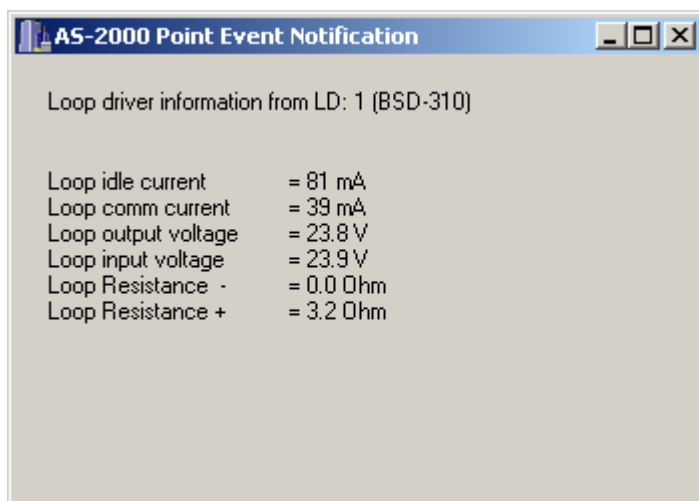
Loop Measure

To measure the loop resistance, current consumption, and loop voltages of the selected loop driver, click the **Loop Measure** button.

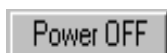
You can use this information to check the loop condition. Note, however, that the current and resistance measuring is not very exact and should only be used as a guiding result.

If the loop is not closed, the resistance will be presented as an Open Loop.

The result is displayed in a dialog box:



## 6.5 Power off the loop



The **Power OFF** button turns off the loop power at both sides of the selected loop driver.

## 6.6 Run tests

The AS2000 tool can run different tests on the loop and the loop units.

### 6.6.1 Test LEDs

To run an automatic LED test for all points on the loop, click the **Test LED's** button.

This brings up the test window, which lets you configure and start the test, as well as displaying the test status:

When you click **Start test**, the test starts with the point at LSI 1 and then selects points on increased LSI values. Branches are selected before continuing on the main loop (for example: 1, 2, 3, 3.1, 3.2, 3.3, 4, 5, ...).

For each point (listed in the “Point currently in test” box), the test turns the LED on for the number of seconds specified in “Led on period”. It then turns the LED off for the number of seconds specified in “Led off period”, before continuing with the next point in the sequence. You can change the LED on and LED off periods while the test is running.

The “Loop scan period” gives the total time and the time left for testing the whole loop. After all points in the loop are tested, the test starts over, and the “Number of tests through the loop” value is incremented.

The **LED test overview** section lists the points that will be tested and the points that do not have any LEDs.

To start over with the first LSI, click **Reset test**.

## 6.6.2 Run a SelfVerify test

To run a full SelfVerify test for all points on the loop, click **SV test**.

This brings up the test window, which lets you start the test and shows the test status. There are no configuration options for the SelfVerify test.

The screenshot shows the 'SV test' window with the following sections:

- POINT IN TEST :**
  - LSI: 03,01
  - Type: V-530-EX/CD/HS
  - Start time: 15:26:15
  - Timeout: [empty]
  - Options:  SV is ON,  Wait for ALARM,  Alarm received,  LED is ON,  SV is OFF,  Saved in list
- TEST STATUS :**
  - Number of loop units tested: 03
  - Number of tests succeed: 05
  - Number of tests failed: [empty]
  - Number of loop units not tested: 01
- LOOP STATUS :**
  - Number of units on the loop: 004
  - Number of detectors to test: 004
  - Number of Fad/Vad to test: 002
  - Total number of SV tests: 006
  - Time: 15:26:29
- Test started:**
  - Date: 11/29/22
  - Time: 15:26:41
- Table of Test Results:**

LSI	Adr	Prod. nr.	Type	SW-ver	Class	StartTime	EndTime	dTime	Result
01	014	2023.002.00030	V-430-S-VADW/AP	3.00	MS:N1,H:GR1	15:26:42	15:26:54	12	OK - Alarm received
01	014		FAD module	3.00		15:26:57	15:26:00	03	OK - FAD verified
01	014		VAD module	3.00		15:26:03	15:26:06	03	OK - VAD verified
02	002	2009.245.52003	BN-303/A	1.01		15:26:09	15:26:12	03	OK - Alarm received
03	115	2009.217.00488	BH-200	2.39	Normal-1	15:26:14	15:26:14	--	NA - Not SV on unit
03,01	050	2019.344.00017	V-530-EX/CD/HS	1.09.04	D:M,H:Al,S:M	15:26:15	15:26:27	12	OK - Alarm received

SV test of the loop is completed

Number of loop units tested : 003  
 Number of successful tests : 005  
 Number of tests that failed : 000  
 Number of loop units not tested : 001

Buttons at the bottom: Start SV for all loop units, Stop SV, Reset, Close, Save to file

When you click **Start SV for all loop units**, the test starts with the point at LSI 1 and then selects points on increased LSI values. Branches are selected before continuing on the main loop (for example: 1, 2, 3, 3.1, 3.2, 3.3, 4, 5, ...). Points that do not have SelfVerify are listed as not tested.

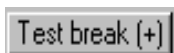
The **POINT IN TEST** section shows which tests are currently being run on which point. The timeout progress bar indicates the timeout period for the current command.

The **TEST STATUS** section lists the test status so far in the test, while the **LOOP STATUS** section shows static information about the units on the loop (collected before the test starts).

If you stop the SelfVerify test, it will complete the test for the current point before terminating. To reset the test result and prepare for a new test, click the **Reset** button.

You can save the SV test log to a Rich Text file by clicking the **Save to file** button.

### 6.6.3 Test for breaks



To test for a break in the positive wire, click the **Test break (+)** button. If a break is found, AS2000 can locate the break.

This test is also performed automatically when clicking the **START** button.

## 7. Upgrade AutoGuard firmware

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If you are using an AS2000 installer package, you can use AS2000 to upgrade the AutoGuard firmware.

AS2000 installer packages include specific firmware upgrades for AutoGuard units. Different installer packages are available for different upgrades. Contact support for a list of available installer packages.

Instructions for upgrading the AutoGuard firmware are available in the separate *AS2000 firmware upgrade guide* that is included with each installer package.



## 8. Monitor SMV information

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Standard measure value (SMV) is a standardized measurement of the environment indicator monitored by a detector. For example, this could be the temperature or the smoke level detected in the environment, algorithmically calculated to a standard value that represents the risk level.

The standard measure value is used to determine the detector condition (Fault, Normal, Prealarm, or Alarm).

AS2000 can monitor SMV information for the detectors on the loop. Note, however, that this feature requires access level “Service”.

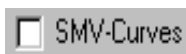
### 8.1 Watch SMV curves

On the **SMV\_Curves** tab, you can watch up to four SMV curves at one time. The X-axis shows a period of time of 360 seconds (6 minutes), and the Y-axis shows the SMV. The limits for Prealarm and Alarm are drawn in yellow and are the same for all point types.

To watch a point’s SMV curve, add the point in one of the following ways:

- On the **Topology** tab, right-click the point and select **Add to SMVCurves**. Choose a detector curve that is not in use.
- On the **SMV\_Curves** tab, double-click one of the four detector symbols and enter the C-address of the point that you want to watch. You can see the C-address of a point in the static information of a loop unit (see *6.2.1 View information about a loop unit*).

To select which point to watch at a time, select or deselect the checkbox for the corresponding detector curve.



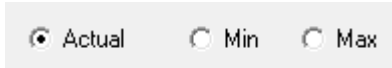
Updating the SMV curves takes a lot of resources, so you might want to temporarily stop updating the enabled curves. To do so, deselect the “SMV-Curves” checkbox.

### 8.2 View SMV bar graphs

On the **SMVGraph** tab, you can watch instant SMV bar graphs for all points on the loop. The X-axis shows the loop sequence index (LSI) values of the loop presented on the **Topology** tab. If the LSI is unknown, the point is labeled as a question mark.

The individual bar graphs are updated every time AS2000 receives a new SMV from a point. Note that AS2000 never asks for a SMV, so if a point has disabled SMV transition or set the SMV transition window too high, the bar graph for this point might never be updated.

The screen shows only 20 points at the time, but you can scroll the displayed area by right-clicking in the graph area and dragging left or right.










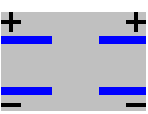
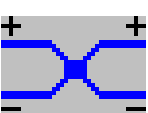



You can choose whether to display actual (instant) values, minimum values, or maximum values. Minimum and maximum values are calculated from the moment AS2000 was started, or since the last reset.

Click the **Update** button to read fresh values from all points, and the **Reset Min/Max** or **Reset all** button to reset the corresponding values.

## 9. List of symbols

List of all known symbols presented on the **Topology** tab:

	<i>Loop driver (P0)</i>
	<i>Heat detector (BD-200/300/500)</i>
	<i>Optical smoke detector (BH-200/300/500)</i>
	<i>Multisensor (smoke&amp;heat) detector (BH-220/320/520/V-430*/AP units)</i>
	<i>Manual callpoint (BF-200/300/500)</i>
	<i>Addressable sounder (BBR-200, BBR-110)</i>
	<i>Input / Output unit (BN-300, BN-310, BN-320, BN-201, BN-303, BN-304, BN-305, BN-307, BN-308)</i>
	<i>Topology ERROR</i> Probably caused by multiple branch-off, which is illegal. Double-clicking this symbol shows a list of the points causing the branch.
	<i>Unknown loop unit</i> Also used for AutoGuard units (boards) that are in bootloader mode.
	<i>Loop Break</i> Indicates a break in the loop wire at the indicated position.
	<i>Loop Short-circuit</i> Indicates a short-circuit on the loop wire.
	<i>Loop Communication Error</i> Indicates a communication error.



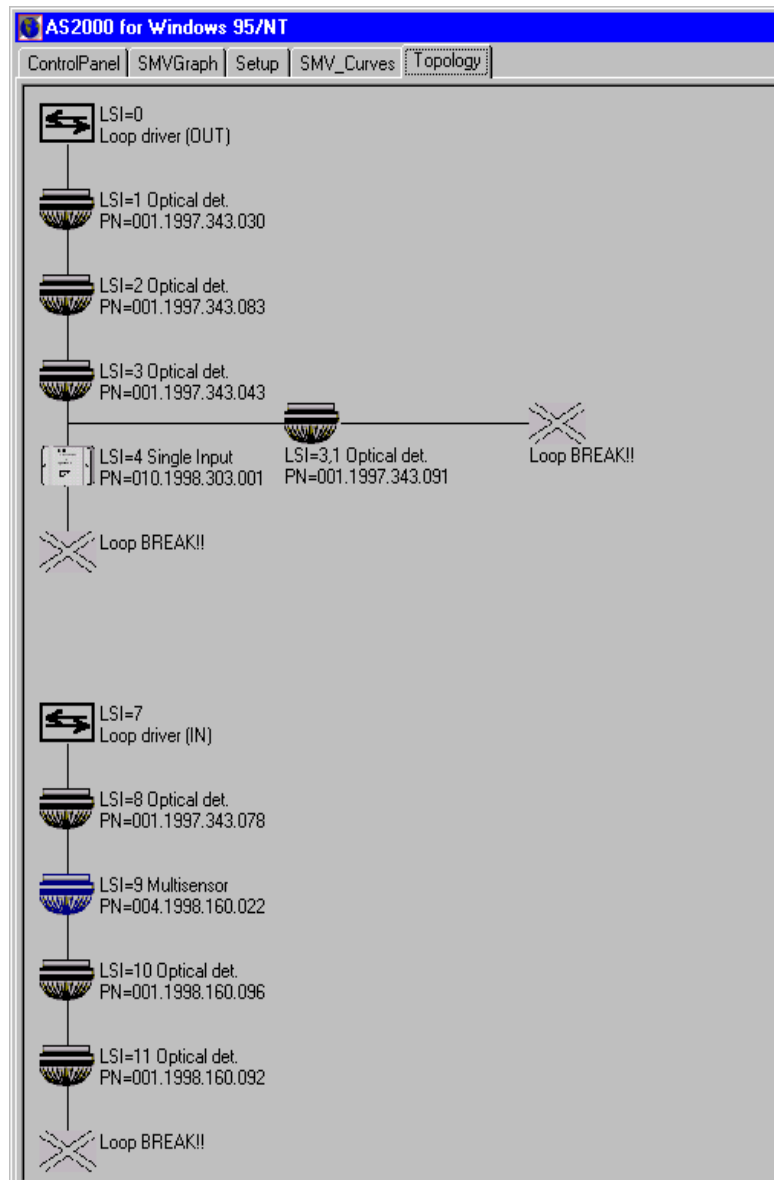
*Point Flame Detector BG-201*

*AutroGuard units*

# 10.Examples of special topologies

## 10.1Ex. 1: Break in loop wiring

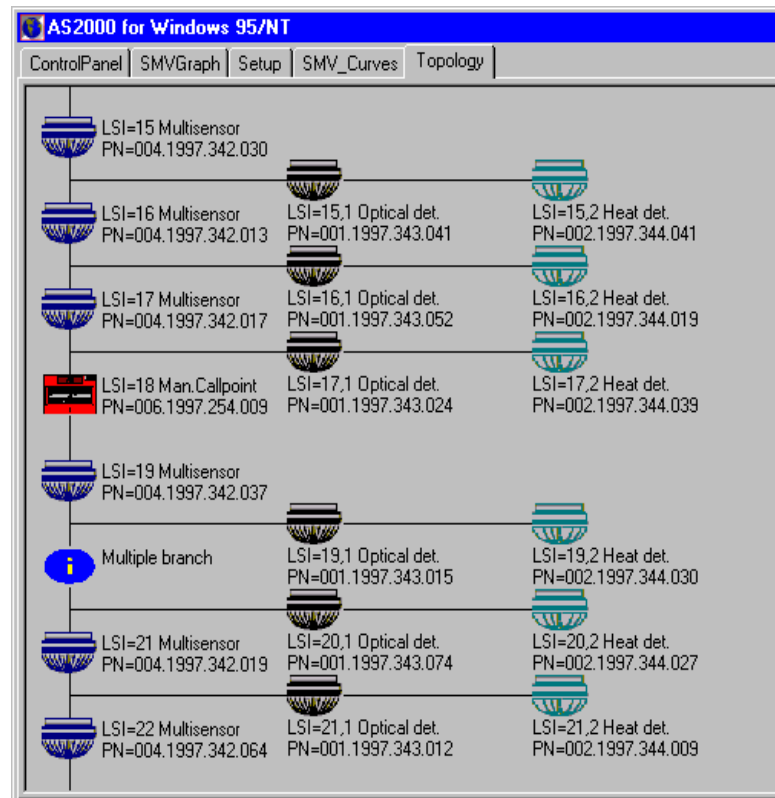
In this example, AS2000 couldn't find the 'IN' side of the Loop driver when powering up from the 'OUT' side. Since AS2000 can't know which of points LSI-4 or LSI-3.1 is the main loop and which is the branch, AS2000 presents a break symbol after both. AS2000 will then power up the loop from the 'IN' side and find the points on the other side of the break. Note that if there is more than one break in the main loop, there may be several points missing in the loop topology presentation.



## 10.2Ex. 2: Multiple branch-off (star connection)

In this example, AS2000 has given a warning between LSI-19 and LSI-21. This is to indicate that when closing LSI-19's switch, more than 2 new points were powered up. AS2000 cannot present more than 3 points in a star connection, and since more than 1 branch-off is an illegal topology, this warning is given.

So in this case, LSI-21, LSI-19.1, and LSI-20.1 are connected to the same point (LSI-19). A possible solution to this problem would be to connect branch 19.1 to 19.2 between the manual callpoint (LSI-18) and the Multisensor (LSI-19).



Note that AS2000 cannot present more than 3 points in a star connection. If there were more than LSI-21, LSI-19.1, and LSI-20 connected to LSI-19, these additional points would not be presented on the **Topology** tab.

## 10.3Ex. 3: Inadequate interpretation of loop topology

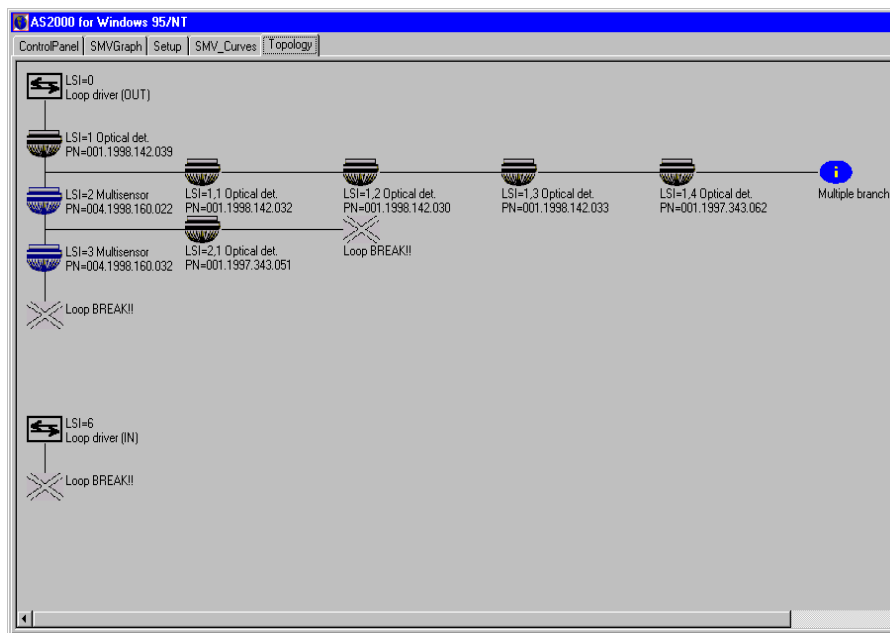
In certain situations, AS2000 might not give a totally correct presentation of the loop topology. Several factors can affect the interpretation of the loop topology, for example, whether a point belongs to the main loop or a branch-off, which point is registered first during power up, if there is an illegal branch-off, etc.

In this example, AS2000 informs you that there is one multiple branch-off, and that there is a break in the loop wire. Note that this is actually not the fact, but a result of how the program interprets the loop in such a situation.

When more than one point powers up at the same time, AS2000 must guess which one belongs to the main loop and which one is a branch-off.

If AS2000 comes to a break in the loop wire, it will swap the last assumption (main loop and branch-off) and continue. But if AS2000 makes a bad guess, and the branch chosen to be the main loop contains a new branch-off (illegal), AS2000 has problems.

Then the last assumption is verified to be true, and the topology presented will be difficult to understand. The presentation is not wrong, but it might be very inadequate.



In the example above, AS2000 guesses that LSI-2 is on the main loop and LSI-1.1 is the branch off. This is actually not true: LSI-1.1 is the main loop.

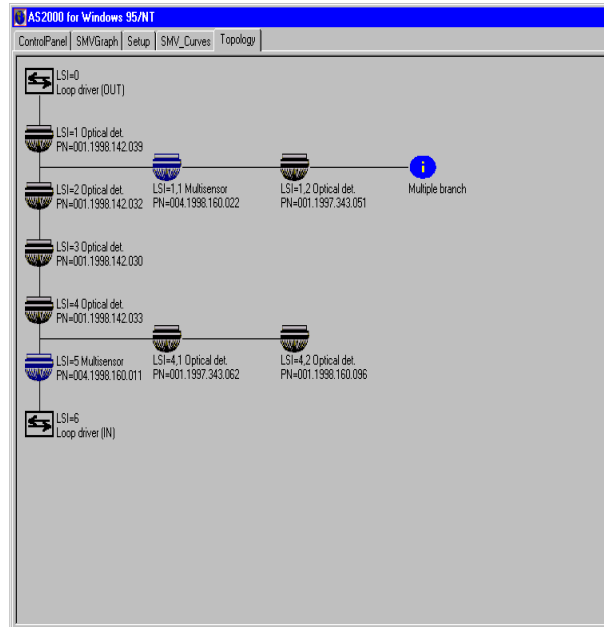
Normally, AS2000 will find out that it has made a mistake, and switch the last guess made. In this example, however, AS2000 meets a branch after LSI-2, and *since a branch in a branch-off is illegal*, it assumes that this is still on the main loop, and that the last guess (LSI-2) was correct. But as it can't find more points on what it thinks is the main loop, it assumes the loop has a break at this point.

*So because of the illegal branch LSI-2.1, AS2000 is misled to believe it is still on the main loop.*

As the assumed branch 1.1 is powered up, two points get powered up at the same time at the end of the branch. This is illegal (no branch-off in branch-offs), so AS2000 places a warning symbol there and stops presenting the rest of the branch.

The two points were actually the last point in what should have been the main loop, and the 'IN' side of the loop driver (closed loop).

Below, the correct topology is presented, as AS2000 would have presented it if it hadn't guessed wrong in the case of LSI-2, or if the illegal multiple branch-off didn't affect the presentation.





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# 11. Terms and abbreviations

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## **Dual Safety system**

A detection system that consists of a primary system and a secondary system, where the secondary system can take over the control of the detection loops if the primary system (or parts of it) is lost for any reason.

## **Fire alarm device (FAD)**

A device that warns of fire, for example, through a sounder or visual indicator.

## **Loop sequence index (LSI)**

A loop-specific index that specifies the exact order of units on the loop (sequentially numbered). The loop units are addressed according to their physical position on the loop.

## **Production number (PN)**

A unique number that stays with a device for its entire lifetime. The production number includes the type of device, the manufacturer code, and the serial number.

## **SelfVerify (SV)**

A self-test for a device that tests the signal path, the alarm devices, and the output units. This self-test ensures the highest grade of reliability and reduces the need for manual testing.

## **Standard measure value (SMV)**

A standardized measurement of the environment indicator monitored by a detector. For example, this could be the temperature or the smoke level detected in the environment, algorithmically calculated to a standard value that represents the risk level.

## **Visual alarm device (VAD)**

A unit that contains a visual alarm indicator (flash, beacon).

